



Contribution ID: 95

Type: **Oral**

Status Target Tests

Thursday, 18 May 2023 11:00 (10 minutes)

For the planned International Linear Collider (ILC) a material for the positron source target is required which can withstand the high energy deposition needed for a high luminosity positron source. To distribute the load and keep the target at a reasonable temperature, the target is rotated with high velocity. Therefore, the material needs not only withstand the cyclical thermal load but also the simultaneous mechanical load. In this work, the behaviour of the material Ti-6Al-4V, which is considered as an appropriate target material, was studied via high energy X-ray diffraction during a cyclical heating process to gain information about changes in the crystal structure and consequently phase fractions. The material was heated homogeneously via induction to temperatures between 300 °C and 800 °C with heating rates of 100 °C/s and cooling rates in the range of 25 °C/s and 100 °C/s. Here, the influence of the maximum and minimum temperature as well as the cooling rate was investigated. Status of recent target tests at the Microtron MAMI, where different target materials irradiated by high energy electron beams will be given as well.

Primary authors: LENGLER, Tim (Hereon); LOTT, Dieter (Hereon); RIEMANN, Sabine (DESY); USHAKOV, Andriy (IJCLAB); MOORTGAT-PICK, Gudrid

Presenter: LENGLER, Tim (Hereon)

Session Classification: Accelerator: Particle Sources

Track Classification: Accelerator: Particle Sources